

**National Geological and Geophysical Data Preservation Program
Fiscal Year 2012**

Final Technical Report for

**Inventory and Metadata Development for the Ohio Division of
Geological Survey's Lake Erie Sand and Gravel Mining Records, Lake
Bottom Bathymetric and Seismic Records, and Thin Section Collections**

**U.S. Department of the Interior
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Abstract

The Energy Policy Act of 2005 mandates the U.S. Geological Survey to implement a National Geologic and Geophysical Data Preservation Program (NGGDPP) to inventory, archive, and preserve geologic and geophysical data collected over the past 150 years. With financial assistance from U.S. Geological Survey Grant G12AS20015-0026 proposal 2012-0026, Ohio Department of Natural Resources, Division of Geological Survey (Survey) completed an inventory of Lake Erie sand and gravel mining records, lake bottom bathymetric profiles, Lake Erie seismic survey logs, and the thin section collection. From these collections, a total of 227 mining records, 140 bathymetric records, 25 seismic logs, and 1,904 thin sections were inventoried. Collection metadata and ACCESS databases were uploaded to the National Catalog for these records.

The Survey thin section collection consists of 1,673 thin sections produced from core samples and 231 grain mounts from well cuttings. Research or grant projects conducted by Survey geologists and clients using the H. R. Collins Laboratory have produced a total of 1,030 or 54.2% of the thin section collection. Energy related investigations of Ohio's black shale units (the Sunbury, Ohio, Antrim, and Utica Shale and the Point Pleasant Formation) have generated 464 thin sections or 24.3 % of the collection. Graduate studies for Master theses and Ph. D. dissertations account for 410 or 21.5 % of the total thin sections. Another 556 thin sections were not included in the inventory because: 1) well name or permit number is missing, 2) location information is not available, 3) poor or no labeling, or 4) the necessary depth information is lacking.

Introduction

In the mid 1980's, the ODGS began work to include all paper inventories and records from physical samples, derived geoscience collections, and indirect geoscience collections into the National Catalog of Archived Materials and produce user friendly web-based maps. From June of 2005, a major effort has been underway to inventory and develop ACCESS databases for the 15 major geoscience collections housed at the Horace R. Collins Laboratory and to update the National Catalog when large collections of new material are donated to the ODGS. Cooperative efforts with the USGS and funding provided by USGS Grant 07HQGR0145, proposal 0024 (2007), Grant 08HQGR0106-0007 (2008), Grant G09AP00094-0006 (2009), and Grant G10AP00118-0016 (2010) provided funds to assist the ODGS in completing inventories for the 15 collections housed at the Horace R. Collins Laboratory. U.S. Geological Survey Grant 11HQPA0014 proposal 2011-0006 allowed the ODGS to complete the inventory and collection metadata for a large new collection of well cutting and limited core donated by Chesapeake Energy in 2010.

Partial funding provided by U.S. Geological Survey Grant G12AS20015 proposal 2012-0026 has assisted the ODGS to complete the inventory of the 2,229 thin sections in

the Survey collection. Data captured includes: American Petroleum Institute number, ODGS cutting sample and/or core number, county, township, lease name, well number, core thin section (TS) or cutting sample grain mount (GM), stratigraphic unit, whether duplicate TS or GM are available, and relevant comments.

The thin section collection has been consolidated into a Lane storage cabinet, storage drawers labeled, storage boxes properly labeled and organized, and the ACCESS data base will aid users in finding the thin sections of interest.

In 2007, the Lake Erie Section of the ODGS was permanently closed and its library and collection of photography, physical samples and paper records were moved to the Horace R. Collins Laboratory. Since then, efforts have been underway to inventory these materials. Funding provided by U.S. Geological Survey Grant G12AS20015 proposal 2012-0026 has assisted the ODGS to inventory sand and gravel mining records, lake bottom bathymetric profiles and logs of seismic surveys in Lake Erie. Additionally, during the performance period of this grant, a cache of 148 gastropod shell samples was discovered. Since these samples were associated with a collection inventoried earlier under a FY 2010 NGGDPP grant, they were also added to the ACCESS database.

Data captured for the sand and gravel mining records include the following: the latitude and longitude of the lease; the quantity, in cubic meters, of material removed; and the end date of the period (month or year) for which each record was compiled. This data helps quantify the amount of mineable materials that have been removed from the lake bottom.

For Lake Erie nearshore bathymetric profiles, data captured include the following: the identification number of each profile, and the latitude and longitude of the start and end points and any inflection points of each profile. This data helps provide a historic baseline for the depths to the lake bottom in the nearshore. This baseline information is good for determining how much subsequent erosion or deposition has occurred in these areas.

For the Lake Erie seismic profiles, data captured include the identification number of each profile and the latitude and longitude of the start and end points and any inflection points of each profile. These profiles help to differentiate between softer, easily erodible bottom sediments and the more competent underlying bedrock or glacial till deposits. They can also be used to identify the topography of the bedrock underlying the unconsolidated sediments of the lake bottom.

Goals Accomplished

The ODGS completed comprehensive inventories for the thin section collection and Lake Erie-associated collections, ACCESS databases, and metadata. The ACCESS database was reviewed and edited to ensure that reliable information was entered. Copies of the database and site specific metadata were provided to the USGS to be incorporated into the National Catalog.

Goals yet be to Accomplished

All goals were met as proposed for grant G12AS20015 proposal 2012-0026.